DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed on July 21, 2011. Claims 1, 3-7, 9-13, and 15-28 are pending and are rejected for reasons of record. Claims 1, 3-4, 9, 13, 19, 21, and 23-26 have been amended. Claim 28 is new.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the Office Action issued on April 28, 2009 which is referred to in the prior Office Action issued on August 17, 2011.

Claim Rejections - 35 USC § 103

3. Claims 1, 3-6, 9-13, 15-16, 18-20, & 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218).

With regard to claims 1, 3-6, 9-13, 15-16, & 18, Zucker teaches a separator material for forming a separator for a lead-acid accumulator / battery (page 1, paragraph 1), wherein the separator material comprises:

A first layer in the form of a microporous film (3, page 6, paragraph 4), which can be made of a thermoplastic material such as polyethylene (a polyolefin) (page 6, paragraph 4 - page 7, paragraph 1) having a molecular weight of at least 300,000, a melt index under normal conditions of substantially 0 (zero), and a viscosity number of

not less than 600ml/g (page 7, paragraph 1), wherein said polyethylene has a filler content of silica (page 7, paragraph 2), and where said first layer has a film base sheet having a number of protrusions / ribs, each defining an area of increased microporous film thickness, on at least one face of the microporous film / film base sheet (page 11, paragraph 5 - page 12, line 2), where at least 50% of the pores of the first layer have a diameter of 0.5µm or less (page 10, paragraph 3), and where said first layer has a thickness of 0.02-0.3mm in areas without protrusions (page 11, paragraph 4 – page 12, paragraph 1); and

At least one second layer (2, page 6, paragraph 2) in the form of a planar fleece material which is located on a face of microporous film (page 16, paragraph 2), where the second layer can substantially consist of glass fibers (page 12, paragraphs 2-3), can substantially consist of polyester fibers (page 12, paragraphs 2 & 4, & page 13, paragraph 1), or a mixture of glass fibers and polyester fibers (page 14, paragraph 2 & page 13, paragraph 1), where the at least one planar fleece layer can be bonded to the microporous film by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2), and where the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3),

But fails to teach that the second layer is located on a face of the first layer / film base sheet / microporous film having such protrusions or that the second layer is located at least at the level of the surface of the microporous film in the area of the weld joints and does not penetrate into this surface, or teach that the protrusions/ribs run vertically and extend over the entire length of the separator.

Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film base sheet / microporous film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the base sheet / microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this surface (Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of the second layer being located on a face of the first layer / film base sheet / microporous film having such protrusions where the second layer is located at least at the level of the surface of the first layer / film base sheet / microporous film in the area of the weld joints and does not penetrate into this surface of Abbe et al. to the separator of Zucker in order to create a separator which can meet different conditions, both from the standpoint of structure as well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 45-49).

Modified Zucker fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator.

Kawai(218) teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai(218) to the microporous film with protrusions / ribs of modified Zucker in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

Modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

Furthermore, it has been held that in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists

(*In re Wertheim*, 541 F.2d 257, 191USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990); MPEP 2144.05).

With regard to claim 19, Zucker teaches a process for the production of a separator material for a battery (page 1, paragraph 1 & page 15, paragraph 3 - page 17, paragraph 1) with the steps:

(a) provision of a microporous film having a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a film base sheet (page 6, paragraph 4 - page 7, paragraph 1, & page 11, paragraph 5 - page 12, line 2), where the microporous film is made of a thermoplastic material such as polyethylene (a polyolefin) (page 6, paragraph 4 - page 7, paragraph 1);

(b) provision of at least one second layer in the form of a planar fleece material (page 6, paragraph 2, page 16, paragraph 2);

(c) location of the at least one second layer on a face of the film base sheet / microporous film (page 16, paragraph 2); and

(d) bonding / welding / fusing the at least one planar fleece layer to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2),

But fails to teach that the second layer is located on a face of the first layer / film base sheet / microporous sheet having such protrusions or that the second layer is located at least at the level of the surface of the first layer / base sheet in the area of the weld joints and does not penetrate into this or teach that the protrusions/ribs run vertically and extend over the entire length of the separator.

Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film base sheet / microporous film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the base sheet / microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this surface (Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of the second layer being located on a face of the first layer / film base sheet / microporous film having such protrusions where the second layer is located at least at the level of the surface of the first layer / film base sheet / microporous film in the area of the weld joints and does not penetrate into this surface of Abbe et al. to the separator of Zucker in order to create a separator which can meet different conditions, both from the standpoint of structure as well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 45-49).

Modified Zucker fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator.

Kawai(218) teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai(218) to the microporous sheet with protrusions / ribs of modified Zucker in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

Modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Zucker fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

With regard to claims 20 and 28, Zucker teaches that the at least one planar fleece layer can be bonded / welded to the microporous film by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2).

With regard to claim 22, Zucker teaches that the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3).

With regard to claim 23, modified Zucker fails to teach the concept of at least some of the protrusions disappearing completely during the welding process.

While modified Zucker fails to teach the concept of at least some of the protrusions disappearing completely during the welding process, Abbe et al. does teach the concept of providing a battery separator that can have irregular, uneven, or nonplanar surface configurations, as desired, to meet different conditions, both from the standpoint of structure as well as from the standpoint of operation and gas liberation within the cell (col. 2, lines 42-49). Furthermore, one of ordinary skill in the art would understand that it would be advantageous to make the protrusions along the edge of the separator disappear completely during the welding process in order to form a seal between the fleece material and the thermoplastic sheet where the protrusions were located, thus preventing peeling / separation of the fleece material from the thermoplastic sheet, and minimize fraying or cracking of the fleece material.

With regard to claims 24-25, modified Zucker fails to specifically state how the planar fleece material is located / placed on the face of the film base sheet / microporous film having protrusions (i.e. gradually laying one of said planar fleece material and said film base sheet / microporous film having protrusions on the other in sections or continuously).

While modified Zucker fails to specifically state how the planar fleece material is located / placed on the face of the film base sheet / microporous film having protrusions (i.e. gradually laying one of said planar fleece material and said film base sheet / microporous film having protrusions on the other in sections or continuously), one of ordinary skill in the art would understand that both methods of production have advantages and disadvantages. One of ordinary skill in the art would understand that gradually laying one of said at least one planar fleece material and said film base sheet / microporous film having protrusions on the other in sections (the fleece material being located / placed with two or more protrusions at a time) would be a faster method of production, but would result in not every protrusion being welded to the fleece material (i.e. not every protrusion would have a secure connection to the fleece material). However, one of ordinary skill in the art would also understand that while gradually laying one of said at least one planar fleece material and said film base sheet / microporous film having protrusions on the other continuously (the fleece material being located / placed with the protrusion at a time) is a slower method of production, this method would ensure reliable connections between each protrusion and the fleece material. Therefore it would have been obvious to one of skill in the art to select

whichever method suits the desired production requirements (i.e. (a) faster production, but less secure connections, or (b) more secure connections, but slower production).

With regard to claim 26, Zucker teaches that the edge areas of said film base sheet / microporous film are not covered with said planar fleece material in order to provide edges for heat sealing which facilitates the formation of pockets (page 14, paragraph 4 – page 16, paragraph 1).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 1 above, and further in view of Farahmandi et al. (US 2001/0020319).

With regard to claim 7, modified Zucker fails to specifically state that the welded joints can be bonded by spot-welding.

Farahmandi et al. teaches that spot welding and ultrasonic welding are two suitable bonding techniques (paragraph [0235]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of bonding via spot-welding of Farahmandi et al. to the bonding technique of modified Zucker because spot-welding is known to be an effective method of bonding and one would have a reasonable expectation of success sin doing so.

Furthermore, it is noted that the product-by-limitations of claim 7 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (*In re Thorpe*, 227 USPQ 964, 1985). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (*In re Brown*, 173 USPQ 685, and *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 16 above, and further in view of Kawai (JP 55-146872) hereinafter referred to as Kawai(872).

With regard to claim 17, modified Zucker fails to teach the concept of the fleece layer comprising a specified amount of glass fibers.

Kawai(872) teaches the concept of a battery separator comprising a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber in order to prevents short circuit at the time of over discharge (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having a separator comprise a mixture of glass fibers

and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber of Kawai(872) to the fleece layer of the separator of modified Zucker in order to produce a separator that prevents short circuit at the time of over discharge (abstract).

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 20 above, and further in view of Bohnstedt et al. (US 2003/0129486).

With regard to claim 21, Zucker teaches bonding / welding / fusing the at least one planar fleece layer to the microporous film by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2) and that the microporous film can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet / first layer (page 11, paragraph 5 - page 12, line 2), but fails to teach that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs or teach specifically state the height of the protrusions.

Abbe et al. teaches that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having the planar fleece material be bonded to at least

some of the protrusions / ribs via welded / fused joints on said protrusions / ribs of the microporous film of Abbe et al. to the separator of Zucker because this is a known method of welding / bonding a planar fleece material to a microporous film / microporous sheet and one would have a reasonable expectation of success in doing so.

Modified Abbe et al. fails to specifically state the height of the protrusions.

Bohnstedt et al. teaches the concept of a battery separator having ribs have a height of 0.3-1.3mm, and preferably about 0.5mm (paragraph [0019]) while the base thickness (separator thickness not including the protrusions) is 0.1-0.6mm (paragraph [0017]) in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having ribs of height 0.3-1.3mm, preferably about 0.5mm of Bohnstedt et al. to the separator of modified Zucker in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker (WO 03/026038) in view of Abbe et al. (US 3,159,507) and Kawai et al. (US 3,210,218) hereinafter referred to as Kawai(218), as applied to claim 1 above, and further in view of Nann et al. (US 4,657,799).

With regard to claim 27, Zucker teaches that the edge areas of said microporous film / film base sheet are not covered with said planar fleece material in order to provide edges for heat sealing which facilitates the formation of pockets (page 14, paragraph 4 – page 16, paragraph 1).

Nann et al. teaches the concept of a lead-acid accumulator / battery (col. 1, lines 14-16) comprising a separator comprising a sheet material (2) covered by a web layer (3) where the web layer is applied to the sheet material in such a way that area extensions (4) of the web layer are smaller than the inside area of the sheet material defined by the binding seams provided in the edge zones / edge areas (5) such that separator pockets are formed at the edge zones which prevent short-circuits between the positive and negative plates (col. 2, lines 42-48 & col. 1, lines 16-23). Nann et al. goes on to teach that a decisive advantage is obtained by the optimization of the properties / size of the web layer (and thus the size of said edge zones / edge areas) with respect to the improvement of the cycle strength of the plates and better utilization of the positive mass (col. 2, lines 1-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the properties / size of the web layer (and thus the size of said edge zones) because the courts have held that optimization of a results effective variable is not novel (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Furthermore, it has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the

prior art device, the claimed device was not patentably distinct from the prior art device. *In re Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Also see MPEP 2144.

Response to Arguments

Claim Rejections - 35 USC § 112

8. Applicant's arguments with regard to the rejections of claims 1 and 3-27, filed on July 21, 2011, have been fully considered and the Examiner's rejections are withdrawn due to the Applicant's amendments and arguments.

Claim Rejections - 35 USC § 103

9. Applicant's arguments with respect to claims 1, 3-7, 9-13, and 15-28, filed on July 21, 2011, have been considered but are moot in the view of the new ground(s) of rejection. The new grounds of rejection are necessitated by the Applicant's amendment and all arguments are directed toward the added feature of 1) adding limitations from claims 8, 15, 16, 18, and 22 to claim 1, 2) adding limitations from claim 8 to claim 19, 3) and adding new claim 28.

Applicant's arguments with respect to claims 1, 3-7, 9-13, and 15-28, filed on July 21, 2011, have been considered but are not persuasive.

On pages 3-4 of the Applicant's Response, Applicants argue that "the material according to the invention is advantageously rather thin.... with regard to Zucker, a fleece material thickness of 0.25mm or less... may seem to partly fall within the range of 0.2 to 3.6mm..., but Zucker prefers 0.3 to 1.0mm" (Applicant's Response, page 3) and that "the preferred material of Zucker is glass fibers, even though a mixture of glass fibers and polymeric fibers may seem to be generally taught" (Applicant's Response, page 4).

In response to the Applicant's argument that "the material according to the invention is advantageously rather thin.... with regard to Zucker, a fleece material thickness of 0.25mm or less... may seem to partly fall within the range of 0.2 to 3.6mm..., but Zucker prefers 0.3 to 1.0mm" (Applicant's Response, page 3) and that "the preferred material of Zucker is glass fibers, even though a mixture of glass fibers and polymeric fibers may seem to be generally taught" (Applicant's Response, page 4), the Examiner notes:

1) The Examiner respectfully disagrees with the Applicants argument that the Applicant's invention as claimed produces advantageous / unexpected results because no evidence has been provided to support this argument. Because Applicant does not provide evidence in the form of an affidavit or declaration under 37 CFR 1.132 that it is

critical that the fleece material have a specific thickness, and does not provide evidence of unexpected results, the claimed values may be held obvious over the prior art (see *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)). It has been held that “to establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range" (*In re Hill*, 284, F.2d 955, 128 USPQ 197 (CCPA 1960) & MPEPE 716.02(d)(II); MPEP 716.02);

2) It has been held that “disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments” (MPEP 2123) and that “a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use” (MPEP 2123). Furthermore, it has been held that "a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments" (MPEP 2123).

On page 4 of the Applicant’s Response, Applicants argue that Abbe "teaches a separator made entirely of glass fibers....moreover, Abbe does not appear to teach a specific thickness of material" (Applicant’s Response, page 4).

In response to the Applicant’s Argument that Abbe "teaches a separator made entirely of glass fibers....moreover, Abbe does not appear to teach a specific thickness of material" (Applicant’s Response, page 4), the Examiner notes that:

1) Abbe was used only to teach the concept of the second layer being located on a face of the first layer / film base sheet / microporous film having such protrusions where the second layer is located at least at the level of the surface of the first layer / film base sheet / microporous film in the area of the weld joints and does not penetrate into this surface; and

2) It has been held that “disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments” (MPEP 2123) and that “a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use” (MPEP 2123). Furthermore, it has been held that "a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments" (MPEP 2123).

On pages 4-5 of the Applicant’s Response, Applicants argue that “Farahmandi does not relate to a separator for a lead-acid accumulator, but to a multi-electrode double layer capacitor. In fact, Farahmandi in paragraph [0003] distinguishes between capacitors and rechargeable batteries” (Applicant’s Response, page 4).

The Examiner respectfully disagrees with the Applicants argument that that “Farahmandi does not relate to a separator for a lead-acid accumulator, but to a multi-electrode double layer capacitor. In fact, Farahmandi in paragraph [0003] distinguishes

between capacitors and rechargeable batteries" (Applicant's Response, page 4) because:

1) Claim 7 is drawn to a separator material for forming a separator for a lead-acid accumulator. The courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (MPEP 2113). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (MPEP 2113). Therefore, the product-by-limitations of claim 7 is not given patentable weight and claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

Furthermore, it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim (*Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)) and that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)). Therefore, the intended function / use of the separator material is not given patentable weight;

2) It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443

(Fed. Cir. 1992). In this case, Farahmandi is considered analogous art because it is in the field of Applicant's endeavor: energy storage devices.

3) Applicant has not shown evidence that the end product would be different and that spot welding wouldn't work. Therefore, the rejection of the claims over Zucker in view of Abbe et al., Kawai(218), and Farahmandi et al. still stands; and

4) One of ordinary skill in the art would understand that it is common sense that the ultrasonic welding of modified Zucker et al. could be replaced by spot welding.

On page 5 of Applicant's Response, Applicants argue that Kawai(872) fails to teach "a separator material consisting of at least two layers, and there is moreover no disclosure of polyester fibers" (Applicant's Response, page 5).

In response to the Applicant's argument that Kawai(872) fails to teach "a separator material consisting of at least two layers, and there is moreover no disclosure of polyester fibers" (Applicant's Response, page 5), the Examiner notes that:

1) Kawai(872) was used only to teach the concept of a battery separator comprising a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber in order to prevents short circuit at the time of over discharge; and

2) Zucker was used to teach, among other things, a separator material having a first layer in the form of a microporous film (polyethylene / polyolefin) and a second layer in the form of a planar fleece material (glass fibers and/or polyester fibers).

On page 5 of Applicant's Response, Applicants argue that "an additional fleece material layer is not disclosed in Bohnstedt" (Applicant's Response, page 5).

In response to the Applicant's argument that "an additional fleece material layer is not disclosed in Bohnstedt" (Applicant's Response, page 5), the Examiner notes that:

1) Bohnstedt et al. was used only to teach the concept of a battery separator having ribs have a height of 0.3-1.3mm, and preferably about 0.5mm, while the base thickness (separator thickness not including the protrusions) is 0.1-0.6mm in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates; and

2) Zucker was used to teach, among other things, a separator material having a first layer in the form of a microporous film (polyethylene / polyolefin) and a second layer in the form of a planar fleece material (glass fibers and/or polyester fibers).

On pages 5-6 of Applicant's Response, Applicants argue that "Nann teaches polyester web layers, and… teaches that bonding of a sheet material with a polyester web layer is only conditionally possible and is less suitable for automatic mass production. To solve this issue the web layer of Nann is applied to the sheet material in such a way that the area of the web layer is smaller than the inside area of the sheet material defined by the bonding seams provided in the edge zones of the sheet

material. Hence, Nann teaches away from the ultrasonic bonding as presently claimed" (Applicant's Response, pages 5-6).

In response ot the Applicant's argument that "Nann teaches polyester web layers, and… teaches that bonding of a sheet material with a polyester web layer is only conditionally possible and is less suitable for automatic mass production. To solve this issue the web layer of Nann is applied to the sheet material in such a way that the area of the web layer is smaller than the inside area of the sheet material defined by the bonding seams provided in the edge zones of the sheet material. Hence, Nann teaches away from the ultrasonic bonding as presently claimed" (Applicant's Response, pages 5-6), the Examiner notes that:

1) Nann was used only to teach the concept of a lead-acid accumulator / battery comprising a separator comprising a sheet material (2) covered by a web layer (3) where the web layer is applied to the sheet material in such a way that area extensions (4) of the web layer are smaller than the inside area of the sheet material defined by the binding seams provided in the edge zones / edge areas (5) such that separator pockets are formed at the edge zones which prevent short-circuits between the positive and negative plates (col. 2, lines 42-48 & col. 1, lines 16-23). Nann et al. goes on to teach that a decisive advantage is obtained by the optimization of the properties / size of the web layer (and thus the size of said edge zones / edge areas) with respect to the improvement of the cycle strength of the plates and better utilization of the positive mass (col. 2, lines 1-16);

2) It is unclear why the Applicant feels Nann teaches away from ultrasonic bonding or teaches that bonding of a sheet material with a polyester web layer is only conditionally possible and is less suitable for automatic mass production (Applicant's Response, pages 5-6).

a) Nann clearly states that the prior art uses a web consisting of glass fiber which cannot be bonded (col. 1, lines 43-44) and goes on to state that "it has been proposed to use polyester webs which can be unconditionally bonded" (col. 1, lines 45-47). This statement does not limit the web to being wholly polyester, but rather merely requires the web contain polyester;

b) Nann also states that "practical application has shown that bonding of the sheet material with a polyester web layer is only conditionally possible and is less suitable for automatic mass production. [But] It is the objective of the invention to provide a useful solution for automatic mass production of lead accumulators while retaining the simplified fabrication process" (col. 1, lines 56-62). Therefore, Nann does not teach that "bonding of a sheet material with a polyester web layer is only conditionally possible and is less suitable for automatic mass production" (Applicant's Response, pages 5-6); and

c) Nann nowhere states that ultrasonic welding cannot or should not be used, so it is unclear why Applicants feel Nann teaches away from ultrasonic welding. A lack of specifically stating that ultrasonic welding can be used does not constitute teaching away; and

3) Zucker was used to teach, among other things, a separator material having a first layer in the form of a microporous film (polyethylene / polyolefin) and a second layer in the form of a planar fleece material (glass fibers and/or polyester fibers).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. ROE whose telephone number is (571)272-9809. The examiner can normally be reached on Monday, Wednesday, Friday, 6:30AM - 4:00PM, EST and Tuesday, Thursday, 11:30AM - 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Barbara Gilliam can be reached on 571-272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1727

/Barbara L. Gilliam/
Supervisory Patent Examiner, Art Unit 1727